

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A process ~~for producing silane crosslinked (cured) polyethylene in which comprising grafting a polyethylene is grafted with a silane comprising at least one ethylenic double bond to form~~ a silane crosslinkable polyethylene which is then ~~optionally subjected to a crosslinking to provide a silane crosslinked polyethylene (curing)~~ step, characterized in that wherein the process further comprises the following process steps:

- a) a sample is taken from the silane crosslinkable polyethylene before ~~crosslinking the curing step;~~
- b) the sample is processed into a film;
- c) the film is analyzed by Infrared Spectroscopy;
- d) a predefined area of the IR spectrum is determined; and
- e) the area determined in step d) is correlated with ~~the an expected~~ gel content in the silane crosslinked polyethylene ~~after the curing step~~ using a predetermined regression curve, wherein the predefined area of the IR spectrum is the area starting at a wave number in the range from 1150 cm⁻¹ to 1205 cm⁻¹ and ending at a wave number in the range from 1020 cm⁻¹ to 1085 cm⁻¹.

Claim 2 (Previously Presented): The process according to claim 1, wherein the polyethylene is a polyethylene homopolymer or a copolymer of ethylene and at least one other olefin.

Claim 3 (Previously Presented): The process according to claim 2, wherein the other olefin is selected from propylene, butene, octene, vinyl acetate, (meth)acrylate and mixtures thereof.

Claim 4 (Previously Presented): The process according to claim 1, wherein the silane comprising at least one ethylenic double bond is a vinyl silane.

Claim 5 (Previously Presented): The process according to claim 4, wherein the silane is selected from vinyltrimethoxysilane, vinyltriethoxysilane, vinylmethyldimethoxysilane and vinylmethyldiethoxysilane.

Claim 6 (Currently Amended): The process according to claim 1, wherein the predefined area of the IR spectrum is the area starting at a wave number in the range from ~~4450~~ 1185 cm⁻¹ to 1205 cm⁻¹ and ending at a wave number in the range from ~~4000~~ 1020 cm⁻¹ to 1085 cm⁻¹.

Claim 7 (Previously Presented): The process according to claim 1, wherein the grafting of the polyethylene with a silane comprising at least one ethylenic double bond to a silane crosslinkable polyethylene is carried out in the presence of a free radical source.

Claim 8 (Previously Presented): The process according to claim 7, wherein the free radical source is a peroxide, a diazo compound or radical generating irradiation.

Claim 9 (Currently Amended): The process according to claim 1, comprising subjecting the silane crosslinkable polyethylene to crosslinking to provide a silane crosslinked polyethylene, wherein the silane crosslinked (~~cured~~) polyethylene is at least a part of a shaped product.

Claim 10 (Currently Amended): The process according to claim 9, wherein ~~in a first step~~ the polyethylene is reacted with a free radical source and the silane to obtain granules of silane crosslinkable polyethylene and ~~in a second step then~~ the granules of silane crosslinkable polyethylene are optionally mixed with a catalyst and formed into the shaped product which is then cured by applying heat and water.

Claim 11 (Currently Amended): The process according to claim 10, wherein the sample ~~in step a)~~ is taken from the granules of silane crosslinkable polyethylene.

Claim 12 (Currently Amended): The process according to claim 7, wherein the regression curve ~~used in step e)~~ is obtained according to the following protocol:

- A) samples of silane crosslinkable polyethylene are produced from polyethylene containing a standard concentration of free radical source and varying concentrations of silane;
- B) samples of silane crosslinkable polyethylene are produced from polyethylene containing a standard concentration of the silane and varying concentrations of free radical source;
- C) optionally samples of silane crosslinkable polyethylene are produced from polyethylene containing varying concentrations of free radical source and varying concentrations of silane;
- D) each of the samples produced in A), B) and optionally C) above are cured, and the gel content of cured product is measured;
- E) of each of the samples produced in A), B) and optionally C) above films of controlled thickness are obtained and subjected to IR spectroscopy;

F) from each of the spectra obtained in step E) above the spectrum of a sample which was produced without silane is subtracted, and the resulting spectra are normalized;

G) a predefined area of each of the normalized spectra is determined; and

H) the areas of step G) are correlated with the gel content of the corresponding cured products obtained in step D) and the regression curve is calculated based on these data.

Claim 13 (Currently Amended): The process according to claim 12, wherein in step A) one sample with a silane concentration of 0% and five or more samples with varying silane concentrations are produced.

Claim 14 (Currently Amended): The process according to claim 12, wherein in step B) five or more samples with varying concentrations of free radical source are produced.

Claim 15 (Currently Amended): The process according to claim 12, wherein step C) is carried out and five or more samples with varying concentrations of silane and free radical source are produced.

Claim 16 (Currently Amended): A method for ~~controlling testing the ability quality of shaped products of silane crosslinked polyethylene in a process in which polyethylene is reacted with peroxide and a vinylsilane at a high temperature to a silane crosslinkable polyethylene to produce a silane crosslinked polyethylene~~ which comprises the following protocol:

- a) a sample is taken from the silane crosslinkable polyethylene,
- b) the sample is processed into a film;
- c) the film is analyzed by Infrared Spectroscopy;

d) a predefined area of the IR spectrum is determined; and
e) the area determined in step d) is correlated with the expected gel content of a shaped product of the silane crosslinked polyethylene using a predetermined regression curve,

wherein the predefined area of the IR spectrum is the area starting at a wave number in the range from 1150 cm⁻¹ to 1205 cm⁻¹ and ending at a wave number in the range from 1020 cm⁻¹ to 1085 cm⁻¹.

Claim 17 (New): The process according to claim 1, wherein the silane crosslinkable polyethylene is not subjected to crosslinking to provide a silane crosslinked polyethylene.

Claim 18 (New): The process according to claim 17, wherein after the area determined in d) is correlated with a gel content using the predetermined regression curve the silane crosslinkable polyethylene is recycled.

Claim 19 (New): The process according to claim 16, wherein the predefined area of the IR spectrum is the area starting at a wave number in the range from 1185 cm⁻¹ to 1205 cm⁻¹ and ending at a wave number in the range from 1020 cm⁻¹ to 1085 cm⁻¹.